

## **ABSTRACT**

The present invention provides compositions and methods for the manipulation of ion channels. For example, the present invention relates to Parkinson's and other neurological diseases and conditions, and treatments thereof. In particular, the present invention provides methods of decreasing pathophysiological high frequency neuronal bursts of Parkinson's and other neurological diseases and conditions. Methods of the present invention comprise decreasing Kv3 ion channel activity in fast-spiking neurons, including by decreasing activity of a Kv3.4 protein and by specifically targeting a Kv3.4 protein with an inhibitor.